Diversification Benefits in Malaysia Real Estate Investment Trusts (M-REITs): Analysis by Property Types

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Abstract: Real Estate Investment Trusts (REITs) is a collective investment scheme that pooled fund and reinvests it mainly in real estate markets. Modern Portfolio Theory (MPT) stated that through diversification of the portfolio, a fund could maximise investment returns while minimising the corresponding risks related to specific investments. In this sense, REITs seem to fit the bill for investors that need to diversify their real estate investment portfolio while minimising risk related to direct investment in the physical property market. In Malaysia, there are different types of REITs that investors may consider invested in, from diversifying REITs to REITs that its investment portfolio specific to a property type. However, there are limited numbers of studies that look into the performance of each REITs company in Malaysia. This paper aims to evaluate the performance of M-REITs based on its asset composition in which the evidence of diversification benefit can be established. This study analyses pricing data of nine M-REITs companies for a period between 2008 and 2015 using the co-integration method. The findings show that there is no significant long-run relationship among M-REITs companies suggesting that there exist diversification benefits in M-REITs investment portfolio.

Keywords: M-REITs, MPT, Diversification Benefit, Co-Integration.

1. Introduction

Real Estate Investment Trusts (REITs) is a type of collective investment where funds are pooled from investors and invested mainly in the real estate market (Hamzah, Rozali and Tahir, 2009). It is a form of indirect real estate investment where income from rental determines REITs profitability. Most of the profit will then need to be distributed to the unit holders or investors as a dividend for tax relief purpose. REITs invest in income-producing property such as retail, office building, hotels, warehouse, healthcare, plantation and educational institutions. Depending on the REITs company strategy, they

may invest in one property type, or they may diversify its real estate holdings to many different property types in order to gain the diversification benefit.

Harry Markowitz coined Modern Portfolio Theory (MPT) in 1952 stated that in order to minimise investment risk and maximising investment returns, a portfolio needs to diversify its asset holdings. The plausible explanation of this theory is that if one asset experiencing a loss, other asset may make a profit that could cover the loss. In order to gain the diversification benefit, assets in a portfolio must exhibit significantly low or zero correlation, indicating return gained from each asset is independent of one to another. The expected benefit of asset diversification strategy is that it could minimise risk through holding multiple investments asset as opposed to single asset holding. Single asset holding exposes the investor to an asset-specific risk.

1.1 Research Background

There are conflicting views concerning property type diversification adopted by REITs companies. According to Morri and Beretta (2008), REITS company need to get experts in order to manage properties of different types, and that would be costly to the company. The diversification strategy will proportionately increase the management cost. On the other hand, Webb and Myer (2000) argue that diversification strategy exhibit a significant impact on REITs performance where it improves overall REITs returns performance

Investors main objective is to invest in assets that could maximise investment return while keeping exposure to risk as minimum as possible. For that, investment in REITs may be considered as adopting the diversification approach. Investment in REITs is akin to real estate investment but rather indirectly. REITs companies adopt various approaches to investment. Some invest in a specific type of property asset others adopt diversification approach in other to maximise the investment return and to reduce specific investment risk. Income structure from rental works differently among different property types, due to its linkage to the cost structure of the respective property types.

Tiong and Jalil (2015) assert that type of property asset is one of the determinant factors in developing REITs portfolio diversification strategy. Investors can diversify their indirect property investment asset by investing in various REITs companies that invest in different property types. However, the main concern is, does the inclusion of various REITs companies in a portfolio will be able to achieve the diversification benefit? This is the question that requires further investigation, and this paper tries to address the performance of M-REITs companies based on different property types of property assets.

1.2 Problem Statements

MPT demonstrate how mixed-asset portfolio can maximise returns and minimise risk. Markowitz (1952) highlighted that the benefit of diversification includes risk mitigation; yield enhancement and the ability to influence return performance. These perceive benefits subsequently encourage investors to adopt diversification approach. In contrary, Giannotti and Mattarocci (2008) argue that investment strategy in a single asset is a reasonable approach in managing real estate investment as oppose to mixed-asset approach. They further pointed out that diversify approach in managing REITs investment is complicated to manage and it further incurs an additional operational cost to hire professional to manage the asset.

REITs are essentially a much affordable approach to get involved in real estate investment. There are many types of properties invested by REITs companies that include office buildings, retail malls, hospitality, logistics, healthcare, plantations, industrial property and higher institutions. Investors who seek to minimise risk exposure to direct real estate would consider investing in REITs, and they may mix the selection of REITs portfolio. Nevertheless, investors must be aware of the risk and return

profiles of the asset composition of the REITs companies. Risk exposure and return expectation of the REITs company is highly correlated to the type of property asset. Jalil and Hishamuddin (2015) pointed in their study concerning shows that one of the influencing factors of the performance of M-REITs was the type of the underlying property asset. Besides, there are findings suggest that single asset REITs perform better than to that of diversifying REITs in which it indicated that specialised REITs return outperform return in the diversified REITs (Chen and Peiser, 1999).

Past studies examine REITs companies in the U.S and the U.K focusing on its performance relating to the underlying property types. However, discussions that compare REITs performance by property type diversification of individual REITs had not been discussed extensively, particularly M-REITs. Therefore, it is reasonable for this research to discuss the performance of M-REITs by comparing the performance among M-REITs listed in Bursa Malaysia. This research will focus on the co-integration relationship among M-REITs in order to establish the evidence of diversification benefit in M-REITs market.

1.3 Research Questions

Given the research issues and discussed in the preceding section, the following are the research questions:

(i)   Do the M-REITs return performance tied to the types of its property asset holding?
(ii) Is there evidence on the existence of co-integration relationship among M-REITs companies?

1.4 Research Objectives

The following are the research objectives that this research tries to achieve:

(i)   To investigate the linkage between return performance and types of property asset holding by the M-REITs companies.
(ii) To evaluate the relationship among M-REITs companies using the co-integration technique.

1.5 Significance of the Study

The main concern of this research is to evaluate the M-REITs performance based on property asset holdings as to ascertain the evidence of diversification benefit. Such study is elusive for the Malaysia real estate investment market. Therefore, this research expects to provide significant benefit to the following parties:

(i) Investors and portfolio managers

This research expects to benefit investors and portfolio managers who are looking for opportunities in investing in indirect real estate. The research will assist in understanding further the relationship among different M-REITs companies within the context of diversification benefit. With this, an informed decision can be made, which could reduce investment risk.

(ii) Researchers and academicians

One of the aims of this research is to add our understanding about the working of indirect property investment, particularly the one this is operating in the emerging market like Malaysia. Therefore this research will benefit researchers and academicians to aid their understanding and to explore potential research work based on the findings of this research.

1.6 Scope of the Study

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The study focuses on nine M-REITs companies listed in Bursa Malaysia. These companies are Al-Aqar Healthcare REITs, AmFirst REITs, Amanah Raya REITs, Atrium REITs, Axix REITs, Hektar REITs, Starhill REITs, Tower REITs, and UOA REITs. All these M-REITs represent a mixture of specialised and diversify REITs that hold assets in various property types. Data for the analysis were collected through the companies' annual report and DataStream for a period between 2008 and 2015.

2. Literature Review

Real estate investment is an investment in a real asset, and therefore, it is different from investment in a financial asset. However, compared to other real assets, income return derives through real estate investment relatively similar to that of the financial asset. Return on investment from other real assets generally derive from capital appreciation; however, as for real estate, investors will be able to enjoy returns from rental income as capital appreciation when investor disposes the asset. While real estate investors enjoy the benefit of being slightly similar to a financial asset, investment directly into physical real estate asset poses a particular challenge due to its characteristics. This peculiarity exposes investors to specific risk in the direct real estate investment. Some of the examples of the risk are liquidity risk, financing default risk, mobility risk, tenancy risk and management risk.

What is a direct real estate investment? Direct real estate investment refers to the sole ownership of physical property asset (Holland, 2006). The advantage of ownership lies in the interest of holding the asset. By owning a property asset, an owner has every right to do whatever it likes to the property. Returns in property investment are deriving from two sources. Rental of physical space to tenant provide income to the owner. The income after removing related costs will then become the net cash flow for the investment. Market conditions and the type of property significantly influence the related cost.

There are various categories of property types, and for category there are subsectors. For example, Pfeffer (2009) stated that for commercial property of the retail sector, there are different types of shopping malls such as regional malls, shopping centres, and factory outlets. Regional malls are to serve more extensive market caption, and it has more than one-anchor tenants. Shopping centres typically found in neighbourhoods where its anchor tenant sells grocery related goods as well as other convenience items. As for factory outlets, this is the type of retail centre where product manufacturers sell its product directly to the consumers through their own branded stores.

In general, investment into the direct property market is diversified into different property sectors; residential, commercial, industrial and agriculture. For each property type, the diversification is further magnified into different types of property. For example, in the residential sector, types of housing are divided mainly into two categories: landed and strata and within these two, the classification is further divided in a different type of houses, which is similar to the case in the retail property sector. Therefore, in direct real estate investment, investors are expected to expose to the risks relating to the characteristic of the real estate market; large investment amount due to large unit amount, immobility, illiquid, management of the property and opaque market structure.

In order to provide solutions to issue relating to the characteristics of direct real estate investment, indirect real estate investment is the alternative for a more liquid investment. There are two broad categories in indirect real estate investment or also known as securitised real estate investment. These are an investment in listed property companies and REITs. Listed property companies may conduct its operation mainly in real estate related sector; it is. However, its involvement in real estate investment activities is relatively minimal. Their main operation activity is related to property construction and development, which its income entirely source from trading activities (Lee and Ting, 2009). Therefore it may not be an appropriate alternative for the direct real estate investment.

On the other hand, REITs is considering an appropriate alternative to direct real estate investment. First, its income is deriving from a rental activity, in which REITs companies are required to invest a significant proportion of its fund in physical property. Secondly, REITs companies must distribute most of its net income in the form of dividend back to the investors in order to fulfil the tax exemption requirement. However, REITs price may not follow its underlying property asset as the pricing is greatly influenced generally by the impact in the capital market, at least in the short run (Lizam, 2012). Unlike the direct property market, REITs allow investors to buy the investment in a smaller unit and investors may increase or dispose of the investment anytime. Its provide liquidity in the investment which is investor's primary concern in direct real estate investment.

2.1 Diversification Theory

Markowitz (1952) was the one who first pointed about the diversification through his Modern Portfolio Theory (MPT). MPT show how an investment portfolio is considered efficient by minimising the investment risk without affecting the expected return. Statman (1987) pointed in his study, by adding various stocks of companies in a portfolio, it can reduce the portfolio risk as measure by the standard deviation. For example, an investor that holds ten equities in its portfolio experienced lower risk level compared to the investor that hole two equities. The main question that concern investors are the optimum numbers of assets to be held in a portfolio that consider as a well-diversified portfolio (Lee, 2005).

2.2 Real Estate and Mixed-asset Portfolio

Recently, investors have started to give attention to real estate to be mixed in an investment portfolio together with stocks, bonds and other financial assets. Various studies have shown the advantage of risk mitigation by adding real estate in a mixed-asset portfolio. A survey by Ziering and McIntosh (1997) on the inclusion of core real estate asset in a mixed-asset portfolio suggests that there are benefits to a portfolio that includes real estate. The finding shows, after adjusting for the volatility, the portfolio that includes real estate experienced reduce risk, improved risk-adjusted return, hedge against inflation, low volatility and low correlation with bonds and stocks.

Brueggeman, Chen and Thibodeau (1984) test the potential of diversification benefit in a portfolio that combines bonds, real estate and stocks. The test includes both with and without real estate to observe the effect on risk and returns. The findings show that by excluding real estate, the risk and return profiles of the portfolio was increased. However, once the real estate included in a portfolio, the risk seems to be reduced significantly. They conclude that by including real estate in a portfolio, it could offer diversification benefit and the performance of real estate was superior compare to stocks and bonds. This study was supported by Hudson et al., (2005), which concludes a portfolio could attain diversification benefit by the inclusion of real estate in a mixed-asset portfolio. The reason is that the correlation between a real estate with bond, stock and cash was significantly low and this makes real estate as an excellent risk-reducer to bonds and stock.

While diversification benefit of real estate may be observed in a mixed-asset portfolio, a study by Georgiev, Gupta and Kunjel (2003) suggest otherwise. On the other hand, Lizieri (2013) noted in a study on the role of commercial real estate in a mixed-asset portfolio for a period between 1990 and 2001 using bivariate correlation. The findings indicate that direct and indirect real estate asset remained a vital investment asset that could provide diversification benefit in a mixed-asset portfolio even though the relationship with other asset was time-varying.

2.3 Diversification by Property Type in Real Estate Investment

Webb (1984) and Louargand (1992) observed that institutional investors most likely diversify their portfolio across different property types with most of the real estate fund managers employ

diversification strategy by property type and region (De Witt, 1996). Comparing between diversification strategy by property types and region, Hartzell, Hekman and Miles (1986) study the return profiles of institutional real estate portfolio composed of 270 properties using correlation. They found that diversification by property type has been observed to exhibit diversification benefit due to low correlation among different property type. As for regional based diversification, diversification by different property type has been observed to provide significant risk reduction. Prior study by Miles and McCue (1984) exhibit similar finding in which it showed the return and risk-adjusted return for residential, office, retail, industrial and motel outperform return and risk-adjusted return in the stock market. They conclude that property type diversification provides more significant diversification benefits compare to that of diversification by region.

On a global scale comparison, Boer, Brounen and Veld (2005) conduct an analysis using return data of 275 listed property companies from the U.S., the Netherlands, the U.K., Sweden and France for a period between 1984 and 2002. The study investigates the extent of property type concentration by the listed property companies and its impact on stock price performance. Their analysis revealed that the property companies in the U.S. concentrate its strategy on property types, while European companies focus on regional diversification. The findings on the relationship between firm performance and property concentration strategy showed that companies that focus on regional diversification perform better and there was a positive relationship between firm performance and property type concentration.

Yunus (2013) examine the dynamic interaction among various property types in eight countries using multivariate co-integration test. The four types of property used in this study are retail, office, industrial and residential. The results for the U.S., the U.K., Canada and the Netherlands demonstrate limited diversification benefit due to all the property types are co-integrated. As for France, Sweden, Finland and Germany, the diversification benefit was observed in these countries. Results from the co-integration test indicate different property types converge partially in the short run. As for the long-run analysis, only industrial property was observed to provide diversification benefit. The study concludes that the property type diversification has diminished in certain countries and only industrial property provides long-run diversification benefit.

2.4 REITs and within Sectoral Diversification

Newell (2012) stated that the reason REITs is attractive to investors is due to the quality of its underlying assets and suggests the importance of types of property asset that should be included in a REITs portfolio as it will have a direct impact on REITs performance. The plausible explanation for the dependence of performance on types of property asset is the income generation capabilities of the asset and the amount of income that can be generated depends on the asset quality.

Miles and McCue (1982) investigate the diversification effect on risk-adjusted return using a sample of equity REITs portfolio for a period between 1972 and 1987. The finding indicates a low correlation between different property types and diversification by property types produces higher risk-adjusted cash yields. Ro and Ziobrowski (2011) make a comparison in the performance of specialise REITs and diversify REITs. Using the CAPM and FAMA-French three-factor model with Carhart's momentum factor, the results suggest that the diversified REITs performed better than specialised REITs. The finding also shows that the specialised REITs exhibit higher market risk when comparing to that of diversified REITs and no evidence of superior performance associated with specialised REITs. A study to investigate the differences in performance between diversified and specialised REITs was carried out by Benefield, Anderson, and Zumpuno (2009). Using Jensen Alpha, Treynor Index and Sharpe Ratio to measure performance, the study found the diversified REITs return perform better than specialised REITs.

Other studies show that specialize REITs perform better that diversify REITs. A study by Danielson and Harrison (2007) examine the effect of property type diversification on REITs' liquidity. They found that specialised REITs could enhance its liquidity compare to diversify REITs. A study by Capozza and Seguin (1999) suggest that diversification will reduce REITs market value. Their study examines the impact of property asset composition and regional location has on REITs market value using Herfindahl indices. The study also reports that diversification will not only increases property-level cash flows and the cost of borrowing but also increase the general and administrative expenses that consequently reduce the liquidity.

3. Research Methodology

This study employs an empirical approach to data analysis using secondary data sourcing from Bursa Malaysia and companies annual report. Two objectives of this study are, first, it seeks to investigate the linkage between return performance and types of property asset holding by the M-REITs companies and second is to evaluate the relationship among M-REITs companies using the co-integration technique.

3.1 Data

As noted, this research uses secondary data obtained through Bursa Malaysia and M-REITs companies annual reports. For the study, the data collected from nine Malaysia REITs companies listed in Bursa Malaysia for eight years, between 2008 and 2015. Data on the selected REITs closing price recorded monthly, that is on every middle of the month. M-REITs consists of 17 REITs companies. However, this study selects nine companies due to it has robust data needed for the whole period of the study. These companies are Al-Aqar Healthcare REITs, AmFirst REITs, Amanah Raya REITs, Atrium REITs, Axis REITs, Hektar REITs, Starhill REITs, Tower REITs, and UOA REITs.

Data on the sample of M-REITs closing price is used to calculate the monthly returns. The monthly return is calculated as follow:

$$R_t = \frac{(P_t - P_{t-1})}{P_{t-1}} \times 100,$$

Where,
R_t = M-REITs price return for month t,
P_t = Closing price of M-REITs at month t,
P_{t-1} = Closing price of M-REITs for the prior month.

3.2 Empirical Analysis

The design of this study is essentially quantitative research. Therefore, there are mainly two analysis techniques that are employed in this study; descriptive and co-integration. The descriptive analysis mainly analyses the data by observing the pattern of M-REITs price movement within the study period. It is also evaluating the dispersion of the price through the computation of mean, standard deviation, minimum and maximum. These are the indicators to examine the performance of M-REITs by property type composition and to present its impact on the overall return and risk.

To understand the linkages among M-REITs concerning diversification benefit, this study employs the co-integration technique. Past studies use correlation to evaluate linkages among property asset in order to demonstrate diversification benefit. However, the correlation coefficient is biased and it is an improper technique to analyse variance between variables contemporaneously (Baum and Schofield, 1991). Although the correlation coefficient is efficient to examine the covariance in cross-sectional data analysis, for time series data, it may overstate the relationship over a period (Eichholtz *et al.*, 1995). Therefore, this justifies the use of the co-integration approach in order to understand the relationship between a series of variables for a period.

3.3 Engle and Granger Cointegration Test

The fundamental of the co-integration test is to examine the evidence of possible dynamic relationship over time between two variables that possess unit-root (non-stationary). Having said that, the purpose of the co-integration test is to observe whether a linear combination of two or more variables are stationary, or otherwise. If there is evidence that the linear relationship is stationary, then it can be concluded that there is evidence of equilibrium relationship has existed in which the stochastic trend of the variables is linked, therefore dismissing the spurious regression effect.

Engle and Granger (1987) observe the spurious regression effect and introduce a formal test for a co-integration relationship. The test, also known as the residual-based test, involves a two-step of analysis. First, fitting a linear regression involving two log prices of variables in long-run equilibrium in the form as

$$logY_t = \alpha + \beta logX_t + \varepsilon_t \qquad\qquad \text{equation 1}$$

Where β represent the long-run coefficient and ε_t is the error term. In order to determine the two variables exhibit a long-run equilibrium relationship, the second step involves a unit-root test on the linear equation error term, ε_t. However, before conducting the Engle and Granger co-integration test, various steps need to be executed. First, a unit root test using Augmented Dickey-Fuller (ADF) test needs to be conducted on all variables at level and first difference. If the two variables is integrated at order one, $I(1)$ based on unit root test, then it is said that the variables in non-stationary at level and stationary at first difference. This is to satisfy the evidence of a co-integration relationship between the two variables before the co-integration test.

It is, however, important to point out that the test statistic to test the significance of the unit-root for co-integration in the error term, ε_t, is different from that of in standard unit-root test. Engle and Granger (1987), Engle and Yoo (1988), Hamilton (1994) and MacKinnon (2010) provide relevant critical value to the hypothesis about the unit-root test in the co-integration error term.

4. Data Analysis and Results

Analysis of the data described in the previous section is broken into two parts: the analysis of return and risk, and co-integration analysis. In the former, the analysis uses arithmetic mean and standard deviation to calculate the average price and capital return as well as standard deviation to represent volatilities of price and capital return. As for the latter, an econometric technique is employed to evaluate the long-run cointegration relationship between M-REITs.

4.1 Return and Risk Analysis

Table 1 shows the monthly average price and its volatility of nine M-REITs included in the study. It presents the findings descriptively to show the average price and volatility for a period of eight years, that is from January 2008 to December 2015.

Table 1: M-REITs average monthly price and standard deviation (Authors compilation)

REIT	N	Minimum	Maximum	Mean	Standard Deviation
Axis	96	0.554950	2.170330	1.392456	0.429867
AmanahRaya	96	0.739580	1.083330	0.931424	0.078254
AmFirst	96	0.888890	1.395060	1.186343	0.144420
Tower	96	0.625000	1.205880	0.932292	0.129466
UOA	96	0.694660	1.236640	1.036816	0.123531
YTL	96	0.802200	1.263740	1.027472	0.108365
Atirum	96	0.639180	1.443300	1.092031	0.214323
Al'-Aqar	96	0.845360	1.484540	1.218106	0.192818
Hektar	96	0.592310	1.253850	1.010497	0.164305
Average				1.09137	0.176150

The findings show that the diversify REITs such as AXIS REITs is observed to produce a much higher average return and highest volatility compare to other REITs, which is very much focus in their selection of investment property. On the contrary, AmanahRaya REIT shows the lowest average return and volatility. This finding is however inconsistent to what has been noted in the literature. AmanahRaya REITs is also one of the diversify REITs which the return behaviour is expected similar to that of AXIS REITs. Finding for Al-Aqar REITs, which investment is concentrated on healthcare properties, show result that is contrary to the investment principle relating to risk-return trade-off. The average return is the second-highest among the nine M_REITs, however it volatility that measures the overall riskiness of the asset is relatively low which is significantly lower than Atrium REITs. Another important observation related to risk-return trade-off is finding in the Tower REITs. Tower REITs focus only on office property, which is one of the specialise REITs in Malaysia. Although the average price is slightly higher than AmanahRaya REITs, the volatility is however significantly higher. Such a result may indicate investors' view on the riskiness of relying on only one sector as opposed to diversifying the property asset.

Table 2: Average monthly return and risk (Authors compilation)

REIT	N	Minimum	Maximum	Mean	Standard Deviation
Axis	95	-48.640480	18.811880	0.174571	7.386600
AmanahRaya	95	-13.953490	11.904760	-0.039251	3.913177
AmFirst	95	-13.131310	10.465120	-0.024531	3.733376
Tower	95	-11.711710	12.500000	-0.064968	4.107953
UOA	95	-11.214950	10.909090	0.264855	3.501303
YTL	95	-9.090909	8.000000	0.182479	3.228911
Atirum	95	-16.216220	9.090909	0.174290	3.721087
Al'-Aqar	95	-7.865169	7.920792	0.348613	3.385776
Hektar	95	-14.754100	14.285710	0.246163	4.057465
Average				0.140247	4.115072

Table 2 present the outcome of average monthly return and volatility for each selected M-REITs for a period between January 2008 and December 2015. Among all M-REITs listed, three REITs are showing negative average returns with volatility relatively higher than some of the REITs that exhibit positive average returns. Given the average monthly returns and volatility as shown in table 2, Al-Aqar healthcare REITs outperform other REITs with the highest average monthly returns and the volatility is relatively lower than diversify REITs company such AXIS and AmanahRaya. By observing the results for average returns and volatility, it can be said that specialised REITs could yield higher while keeping the volatility at reasonable level compare to diversified REITs. Diversified REITs seem to exhibit riskier behaviour, for example, AXIS, AmanahRaya and AmFirst REITs produces lower return

and among with high volatility. The reason for such an outcome could be due to asset size and concentration of property asset.

Table 3: Asset size, average NAV, average dividend and average total asset value (Authors compilation)

REIT	Number of Asset	Average NAV (RM)	Average Dividend (sen)	Average Total Asset Value (RM)
Axis	28	1.95875	16.19000	1,450,000,000
AmanaRaya	14	1.06054	7.04315	966,000,000
AmFirst	8	1.25174	8.06875	1,150,000,000
Tower	3	1.72230	9.54750	618,000,000
UOA	6	1.49525	10.68750	867,000,000
YTL	12	1.18000	7.40000	2,450,000,000
Atrium	5	1.19500	8.34125	212,000,000
Al'-Aqar	21	1.12375	7.82750	1,305,000,000
Hektar	4	1.42750	10.41250	846,000,000

Table 3 show information relating to the financial aspect of the selected M-REITs. Based on the table, it can be concluded that asset size as measure by the number of properties in the respective REITs portfolio is not the key determinants to the total asset value. Asset size is not consistent with the other indicators as well. For example, although AXIS REITs exhibited the largest asset size and paid the highest dividend, its total asset value is significantly lower than YTL REITs. The reason for this is that AXIS REITs is diversified in its property types composition located in various locations. Its property holding, particularly the ones that are related to the logistics industry located further from the city centre. On the other hand, YTL REITS is a specialised REITS that is focusing on hospitality such as hotel business which located mainly in major cities. While, the number of assets is much lower than AXIS REITs, the location of the property that makes its total asset value far higher than a diversified REITs such as AXIS.

Another important indicator is the dividend paid. REITs are required to pay out a significant proportion of its income to investors in the form of a dividend payment. The table shows the AXIS, UOA and Hektar REITs are among REITs that paid the highest dividends. AXIS REITs paid on average RM0.16 dividend per share during the study period which far higher than the closest two, UOA and Hektar REITs. This indicates the diversification of asset strategy is working for AXIS in generating income for investors in various commercial property sectors. The key highlight of the findings is that the quality of the asset pays a better return to investors. For example, UOA and Hektar REITs asset consist of high-end office and retail properties in which the properties are located at the prime are that could yield higher rental value and better lease structure that tilted towards the benefit to REITs investors.

4.2 Co-integration Analysis

Before carrying out the analysis, the price trend of the selected M-REITs must first be observed. Figure 1 demonstrates the price movement of all selected M-REITs for the study. The prices have been normalized to establish a base index of one started in January 2008.
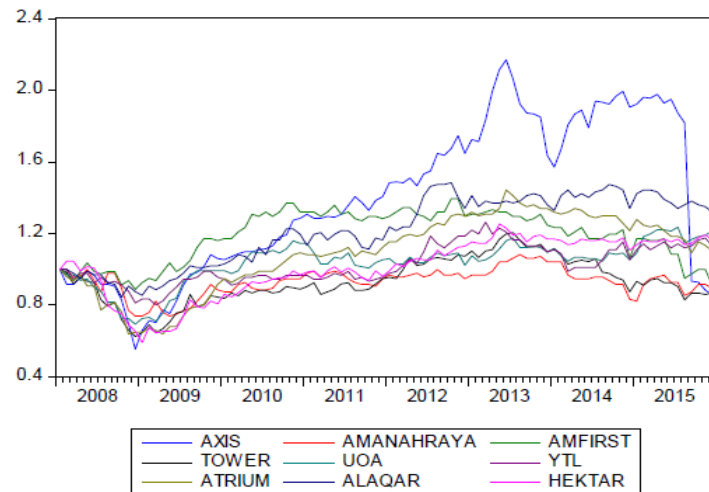
Figure 1: Monthly price trend of selected M-REITs for a period between January 2008 and December 2015

As shown by figure 1, there seem a general co-movement of prices for the whole study period except for AXIS REITs. During 2008, all prices were observed to exhibit a downward trend due to global economic crisis known as credit crunch that significant affecting countries in the U.S and Europe. The impact is then reverse in 2009 that seems the prices were moving into an upward trend until 2013 before gradually diminishing towards 2015.

A significant departure from a general trend can be observed in AXIS REITs. Before 2011, the price movement is trending together with other M-REITs. A clear divergent is seen after the second quarter of 2011 and the trend peaked in 2013 before drop significantly in the second quarter of 2013. As pointed in AXIS REIT Annual Report (2013), a dramatic drop in its price was caused by a report that the U.S may reduce its interest rate that result to foreign investors move its capital as well as the increase in Malaysia Government Securities (MGS) interest rate. Another drop in price was again observed in the second quarter of 2015. The price decrease from RM3.31 per share to RM1.70 per share and the reason stated in the fund's 2015 annual report noted this due to split unit exercise that was completed in September 2015 (AXIS REIT Annual Report, 2015). The split unit was on the 1-for-2 basis and the decision was made due to high share price per unit and the fund aim to enhance its liquidity and affordability in order to provide access to a broader group of investors.

(a) Unit Root Test

To test for the co-integration based on Engle and Grange co-integration test, first, a unit root test must be conducted to confirm all variables are stationary at the first difference, $I(1)$, to address concern relating to spurious regression. Therefore, the unit root test is conducted for the selected variables at the price level and the first difference. The Augmented Dickey-Fuller (ADF) is employed to perform the unit root test.

Table 4: ADF unit root test at price level

REIT	ADF Test Statistic	Critical Values		
		10%	5%	1%
logAxis	-1.093359	-2.583192	-2.892200	-3.500669
logAmanahRaya	-2.017242	-2.583553	-2.892879	-3.502238
logAmFirst	-1.059168	-2.583192	-2.892200	-3.500669
logTower	-1.422027	-2.583192	-2.892200	-3.500669
logUOA	-1.003908	-2.583192	-2.892200	-3.500669

Table 5: ADF unit root test at first difference

REIT	ADF Test Statistic	Critical Values		
		10%	5%	1%
logAxis	-8.531585	-2.583371	-2.892536	-3.501445
logAmanahRaya	-8.295000	-2.583553	-2.892879	-3.502238
logAmFirst	-11.288590	-2.583371	-2.892536	-3.501445
logTower	-9.946949	-2.583371	-2.892536	-3.501445
logUOA	-8.807083	-2.583371	-2.892536	-3.501445

Table 4 and Table 5 shows finding for the ADF unit root test at the price level and first difference, respectively. The outcome of the unit root test shows that all variables that are considered to proceed for Engle and Granger co-integration test are integrated at second order, that it $I(1)$. The result in table 5 shows that all variables are stationary at the first difference and based on the critical values shown, and all are significant at the 1 per cent significance level.

(b) Engle and Granger Co-integration Test

The test to determine the evidence of a long-run cointegrating relationship is based on the regression model as shown in equation 1. Based on the ADF unit root test, all selected variable has met the condition of the Engle and Granger co-integration test and four simple regression models were developed representing relationship between logAxis vs logAmanahRaya, logAmanahRaya vs logAmFirst, logAxis vs logAmFirst and logTower vs logUOA.

Table 6: Engle and Granger co-integration test for each model

REIT	Log m REIT = α + β Log x REIT + ε			
	C	β	R-squared	Standard Error
logAxis vs logAmanahRaya	0.460757	2.427140	0.408877	0.256481
logAmanahRaya vs logAmFirst	-0.139744	0.398710	0.337434	0.071537
logAxis vs logAmFirst	0.001858	1.701806	0.426675	0.252591
logTower vs logUOA	-0.101804	0.769410	0.487034	0.103456

Table 7: ADF unit root test for the regression residuals

REIT	ADF Test Statistic	P-Value	Critical Values		
			10%	5%	1%
logAxis vs logAmanahRaya	-2.480798	0.123300	-2.583192	-2.892200	-3.500669
logAmanahRaya vs logAmFirst	-2.889347	0.050300	-2.583192	-2.892200	-3.500669
logAxis vs logAmFirst	-1.951445	0.307800	-2.583192	-2.892200	-3.500669
logTower vs logUOA	-0.698472	0.841300	-2.583371	-2.892536	-3.501445

Table 6 and Table 7 shows the result for the first step in the Engle and Granger co-integration test and ADF unit root test of the regression residuals, respectively. Table 6 shows the regression coefficient representing long-run relationship between the two variables in each regression model. However, the interest of this study is on the evidence of the co-integration relationship between two variables in each model. Therefore, the out in table 7 is the focus of the study.

To determine that there is a co-integration relationship between the two variables, the ADF unit root test must show the model's residual exhibit stationary trending behaviour. If there is a stationary behaviour in the model's residual, then no diversification benefit is observed in the relationship as these two variables is consider exhibiting similar trending behaviour. Otherwise, there is evidence of non-stationary in the relationship and therefore there no similar trending behaviour of the two variables.

Evidence of diversification benefit can be concluded. The findings in table 7 suggest that there is no evidence of stationary in each model residual. Therefore, there is a potential of diversification benefit between the two M-REITs in each model can be concluded.

5. Discussion and Conclusion

The aim of this study is to evaluate the evidence of diversification benefit among selected REITS companies listed in Bursa Malaysia. The analysis begins by investigating the risk and return profiles of the sample M-REIT companies. The findings show that the diversified REITs performed poorly by looking at the low average return and high volatility compare to specialise REITs. This finding is consistent with that of Chen and Peiser (1999) that conclude the specialise REITs outperform specialise REITs due to its liquidity advantage. Also, the REITs risk-return performance is varied based on the diversification strategy employ by the firm. Benefield (2006) argue that there were significant differences in performance of specialise and diversified REITs based on property type diversification. Specialised REITs perform well during unstable market condition (Benefield, Anderson and Zumpano, 2009). As a result, diversified REITs do not necessarily provide a higher return to compensate for the volatility.

Income for REITs mainly comes from rental. Some of the properties in REITs asset portfolio exhibit significant percentage of vacancy rates and subsequently affecting the fund capacity to pay a dividend to investors as a result of reducing net income. This issue has been observed in several M-REITs companies where although there are quite a number of properties held in a REIT portfolio, however the dividend paid is not consistent with the number of properties held. Take AmanahRaya REIT for a case in point, the fund owns 14 properties in various location of different types. However, its total vacancy rate is 10 per cent which is much higher compare to UOA REIT and Hektar REIT which owns on six and four properties with the vacancy rate at 7 and 3 per cent, respectively. Therefore, the quality of asset plays a vital role to ensure sustainable income to the fund.

On a different note, the global financial crisis has also significantly impacted M-REITs prices. Although this may be due to stock market spillover effect, the shock took around a year before the price starts to recover. This impact is visible by observing the price trend in 2008 which show prices of all M-REITs companies experience a significant downturn. It said this was due to the U.S. subprime mortgage crisis and Malaysia was affected due to the country's financial system is interconnected with the U.S. (Lee and Leong, 2015). Another drop in M-REITs prices was again observed in November 2014 and this time was due to the fall in oil prices at a global scale.

The final part of this study is to observe the existence of diversification benefit among selected M-REITs covering specialised and diversified REITs. Findings from Engle and Granger co-integration test suggest there is no evidence of co-integration between variables tested through five co-integration models, hence indicating there is a diversification benefit among five selected M-REITs companies. A possible explanation for such outcome is as suggested by Jalil and Hishamuddin (2015) that stated the type of underlying properties in a REITs portfolio do impact on its performance, hence reflecting the amount of net income produces. The finding also shows, even if the REITs holds similar asset types in its portfolio the price movement indicate otherwise. For example, all M-REITs that are modelled through simple linear regression are holding similar asset types in their respective portfolio. However, when tested for the evidence of co-integration, none of the models indicates a cointegrating relationship in its residuals. The main reason for that could be due to factors such as asset quality, the location of the asset and the proportion of the property type relative to the overall net lettable area in a REITs portfolio. Such views are supported through studies by Eichholtz *et al.* (1995) and Tarbert (1998).

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